

R E M A R K S

Claims 1-5 are pending and stand ready for further action on the merits. Claim 6 has been cancelled.

Claim 1 has been amended to recite that component B has at least one chemical structure of the compounds described by the trademarks ARONIX M-320, ARONIX M-350 and ARONIX M-360, which appear in the paragraph bridging pages 15-16. Each of the ARONIX compounds is available from Toagosei Chemical Industry Co., Ltd. The catalog of Toagosei Chemical Industry Co., Ltd. was previously submitted as an attachment to the August 27, 2003 Amendment and describes on page 5 the chemical formulas and names of ARONIX M-360, 350 and 320 used in the Examples.

Also, the range of component C can be found in the third full paragraph on page 11 of the specification.

The specification has been amended to remove all changes made in the August 27, 2003 Amendment which relate to the description of component (B).

No new matter has been added by way of the above-amendment.

The following sections correspond to the sections of the outstanding Office Action.

Issues Under 35 U.S.C. §112, second paragraph

Claims 1-3 and 6 are rejected under 35 U.S.C. §112, second paragraph for being indefinite. Applicants respectfully traverse the rejection.

The Examiner has taken the position that the term "modified" as appearing in the definition of component (B) of claim 1, renders the scope of the present claims indefinite.

In response, Applicants have deleted the term "modified" from claim 1. Accordingly, Applicants respectfully submit that the scope of component (B) is clarified to the extent required by 35 U.S.C. §112, second paragraph. As such, withdrawal of the rejection is respectfully requested.

Kushi et al., U.S. 4,970,135

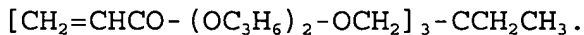
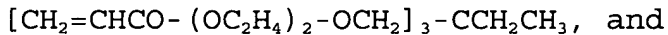
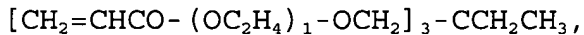
Claims 1 and 3 remain rejected under 35 U.S.C. §102(b) as being anticipated by Kushi et al., Applicants respectfully traverse the rejection.

In the paragraph numbered as "5" on page 5 of the outstanding Office Action, the Examiner states:

Because of the confusion over the limits of (B) in the instant claims the Examiner cannot determine that the compositions of Kushi et al. are excluded by the

instant compositions.

In response, Applicants have amended claim 1 by limiting the definition of component (B) to at least one of



In describing the requirements for rejection of a claim by anticipation, the Manual of Patent Examining Procedure (Section 2131) states:

[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference (ref. omitted). The identical invention must be shown in as complete detail as is contained in the... claim (ref. omitted).

Accordingly, every element in a claim must be found in the reference in order that the reference anticipates the claim. Applicants respectfully submit that in view of the above-amendment limiting Component (B), it is clear that Kushi et al. do not anticipate the present invention. As such, withdrawal of the rejection is respectfully requested.

Watanabe et al., U.S. 5,721,076 and Grant et al.

Claims 1-3 are rejected under 35 U.S.C. §103(a) as being unpatentable over Watanabe et al. as evidenced by Grant et al. Applicants respectfully traverse the rejection.

In the August 27, 2003 Amendment, Applicants argued as follows:

[i]n Watanabe, there is no teaching or suggestion of Component (B) nor of the high reliability resulting from its use. None of acrylates cited as examples in Watanabe is modified by an alkylene oxide. For example, a glycol acrylate in Watanabe is represented by $\text{CHR}=\text{CH}-\text{COO}-\text{R}'-\text{OOC}-\text{CH}=\text{CHR}$ (R is H or Me and R' is an alkylene group), whereas the inventive compounds are modified by an alkylene oxide (R"O). A typical example of the inventive compounds is represented by $\text{CHR}=\text{CH}-\text{COO}(\text{R}''\text{O})_n-\text{R}'-(\text{R}''\text{O})_n\text{OOC}-\text{CH}=\text{CHR}$ (wherein R" is an alkylene group).

In response, the Examiner has taken the position that Watanabe teaches compounds which are encompassed by inventive component (B) in column 10, lines 45-58.

Applicants respectfully submit that the compounds of column 10, lines 45-58 are di, tri or tetra-ethylene glycol di(meth)acrylates modified by alkylene oxide. Since the above amendment has limited the present claims to tri(meth)acrylates, the present claims do not encompass the compounds of Watanabe et al.

Furthermore, the use of the inventive tri(meth)acrylates has the advantageous effect of raising the crosslinking density and improving reliability and Tg.

The Examiner, aware of the deficiencies of Watanabe et al., cites Grant et al., in order to cure those deficiencies. Applicants respectfully submit that Grant et al. fail to cure the deficiencies of Watanabe et al.

Since Grant et al. fail to fairly suggest modifying the di(meth)acrylates of Watanabe et al. to be tri(meth)acrylates, a *prima facie* case of obviousness cannot be said to exist. As such, withdrawal of the rejection is respectfully requested.

Watanabe et al. and Cohen

Claims 1-3 and 6 are rejected under 35 U.S.C. §103(a) as being unpatentable over Watanabe et al. in view of Cohen, U.S. 3,380,831. Applicants respectfully traverse the rejection.

In Applicants' August 27, 2003 Amendment, Applicants argued that a *prima facie* case of obviousness can not be said to exist, since a skilled artisan would not be motivated to replace the acrylates of Watanabe et al. with the alkylene oxide modified acrylates of Cohen, since the acrylates of Watanabe et al. are useful in controlling the viscosity, whereas the alkylene oxide acrylates of Cohen are added to reduce the toxicity.

In the paragraph numbered as "10" on page 7 of the Office Action, the Examiner indicates that she has not found these arguments persuasive.

Applicants respectfully maintain the position that there would be no motivation to replace the acrylates of Watanabe et al. with the alkylene oxide modified acrylates of Cohen based on the following comments.

Watanabe et al. describe the unsaturated (A) component, but do not teach the use of the acrylate (B) component. In order to cure this deficiency, the Examiner cites Cohen. However, Cohen describes the acrylate (B) component, but does not teach the use of the unsaturated (A) component.

This is an important distinction, since the most important feature of the present invention is the simultaneous use of both the (A) and (B) components. The cited references give no suggestion at all on the simultaneous use of the (A) and (B) components or teach nothing about the advantageous effects of their simultaneous use.

The Examiner relies on the teaching by Cohen that an alkylene oxide-modified (meth)acrylate shows reduced toxicity in order to find motivation to modify the composition of Watanabe et al. However, Applicants respectfully submit that it is quite unreasonable to say on the basis of Cohen's description that a (meth)acrylate can be readily replaced by an alkylene oxide-modified (meth)acrylate.

That is, the alleged ready replacement implies that a (meth)acrylate must nearly be equal to its alkylene oxide modified form except for toxicity. However, Applicants respectfully submit that the experimental evidence in the present specification shows that the use of the inventive alkylene oxide modified form of the (meth)acrylate provides unexpectedly superior reliability in thermal shock tests to the (meth)acrylate

form.

For example, B1-B3 and E1-E2 used in Table 1 of the present application differ from each other only in the presence or absence of modification with alkylene oxide, but they produce large differences in effect as shown in Table 2. Both Tables 1 and 2 are reproduced herein for the Examiner's convenience.

Table 1

	Component A	Component B	Component C	Component E
Ex. 1	A1 60g	B1 26 g	C1 12 g	
Ex. 2	A1 60g	B2 26 g	C1 12 g	
Ex. 3	A1 60g	B3 26 g	C1 12 g	
Ex. 4	A2 60g	B1 26 g	C1 12 g	
Ex. 5	A1 60g	—	C1 12 g	E1 26 g
Ex. 6	A1 60g	—	C1 12 g	E2 26 g
Ex. 7	A2 60g	—	C1 12 g	E1 26 g

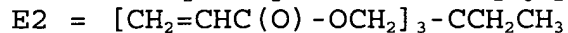
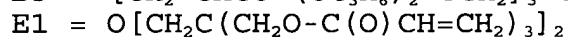
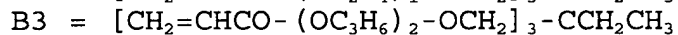
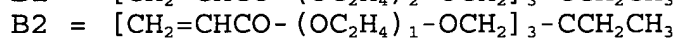
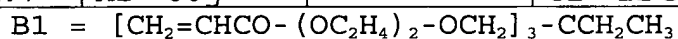


Table 2

	Reliability %	Resolution μ m	Tg °C
Ex.1	1 0 0	2 0	2 0 0
Ex.2	9 5	2 0	2 0 0
Ex.3	9 5	2 0	2 0 0
Ex.4	1 0 0	2 0	2 0 0
Ex.5	0	2 0	2 2 0
Ex.6	0	2 0	2 2 0
Ex.7	0	2 0	2 2 0

For example, the modified acrylate of Inventive Examples 1-4 are far superior in reliability during thermal shock tests when compared to Comparative Example 6 which incorporates essentially the same acrylate except that the acrylate of Comparative Example 6 does not include the -Oalk- linkage.

Clearly, such an improvement in reliability to thermal shock would not be expected based on the teachings of Watanabe et al. and Cohen.

Furthermore, the toxicity mentioned by the Examiner is merely toxicity against the skin and the compound in question eventually becomes nontoxic after curing. Accordingly, it would not be necessary to undertake replacement on the basis of reduced toxicity.

(Meth)acrylates are compounds in common use and they can be handled without difficulty. The simplest member of (meth)acrylates is methyl acrylate. Granted that methyl acrylate

is toxic to the skin, it will continue to be used even in view of Cohen's teaching that the methyl acrylate modified with an alkylene oxide is less toxic. This is also apparent from the fact that alkylene oxide-modified (meth)acrylates are regarded as specialty resins and are seldom used at the present time.

In summary, Applicants respectfully submit that a prima facie case of obviousness cannot be said to exist, since the combination of Watanabe et al. and Cohen fail to teach or fairly suggest the simultaneous use of the (A) and (B) components or the advantageous effects obtained therefrom. Accordingly, withdrawal of the rejection is respectfully requested.

Issues Under 35 U.S.C. §132

The Examiner objects to Applicants amendment to the specification in the August 27, 2003 Amendment under 35 USC 132 for introducing new matter to the disclosure. Applicants respectfully traverse the objection.

Specifically, the Examiner believes that there is no support for component (B) when component (B) is a (meth)acrylate that is not a reaction product of alkylene oxide.

In response, Applicants have amended the specification by removing all changes made in the August 27, 2003 Amendment which relate to the description of component (B). As such, no new matter could possibly exist with respect to the description

of component (B) and withdrawal of the objection is respectfully requested.

Conclusion

In view of the above amendments and comments, Applicants respectfully submit that the claims are in condition for allowance. However, in the event the Examiner finds to the contrary, Applicants respectfully request entry of this Amendment into the official file to place the claims in better form for appeal.

If the Examiner has any questions concerning this application, he is requested to contact **Garth M. Dahlen, Ph.D., Esq.** (#43,575) at the offices of Birch, Stewart, Kolasch & Birch, LLP.

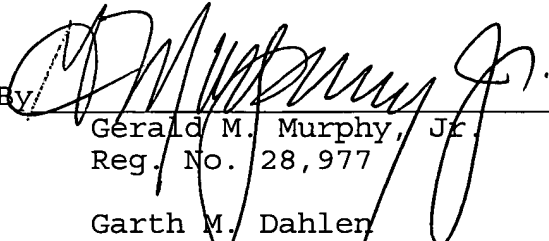
If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional


Appln. No.: 09/996,938

fees required under 37 C.F.R. § 1.16 or under § 1.17;
particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By 
Gerald M. Murphy, Jr.
Reg. No. 28,977
Garth M. Dahlen
Reg. NO. 43,575


GMM/GMD:brp

P. O. Box 747
Falls Church, VA 22040-0747
(703) 205-8000